TWO NEW NORTH AMERICAN ISOTOMA (COLLEMBOLA) AND KEY TO EYELESS FORMS

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Few eyeless species of *Isotoma* have been described and it was of special interest when the following were found in widely separated localities. Schäffer (1896) described a small, white, eyeless species (*Isotoma minor*) which lacked postantennal organs and which was found in the soil and under objects in damp situations. Linnaniemi (1912) described another species (*I. sphagneticola*) which had a postantennal organ but no eyes, and which was found in sphagnum in Finland. Chamberlain (1943) described a species (*I. spatulata*) without eyes but with a postantennal organ, and which occurred in nests of a termite (*Termopsis angusticollis* Hagen) in Oregon. Of the two species described in this paper, one (*I. tariva*) was found in the leaf mould along a river in North Carolina, and the other (*I. brucei*) in a pocket gopher nest, in Utah.

Isotoma tariva n. sp.

Length up to 1.5 mm. White background with a sprinkling of fine round dots of black pigment arranged in small stringy groups over head and body. Eyes absent. Postantennal organs present, broadly elliptical in shape, situated near base of the antennae. Antennae one and a half times longer than head with relative length of segments as 13: 25: 25: 40. Organ of third antennal segment consists of two slightly bent rods lying each behind a fold; 4th ant. segment with several long curved sensory setae and some shorter ones. Unguis short, stout, without inner or outer teeth. Unguiculus broadly lanceolate becoming acute and pointed at apex, without teeth. Tenent hairs absent. Tenaculum quadridentate, with 5 setae on corpus. Last two abdominal segments not ankylosed. Manubrium to dentes as 30: 80. Manubrium and dentes densely covered with short curving setae, especially ventrally. Mucro tridentate, with a small basal tooth, a large median tooth and a large terminal, upcurved falcate tooth. Body clothing consists of numerous short, reclinate setae, and numerous long, curved, fringed setae on last three abdominal segments.

Type locality: Oxford, North Carolina, March 20, 1952, D. L. Wray. This species was taken in large numbers from the forest floor covering along Tar River in the course of a project I am now making in studying the Collembola fauna and populations along the

main river habitats which flow through the State toward the Atlantic drainage. This species was found associated with *I. andrei* Mills, a three-eyed species. Cotypes deposited in the NCDA Insect Survey Collection, Raleigh.

Isotoma brucei n. sp.

Length up to 1.8 mm. Yellowish-white background with traces of black pigment over head and body in the pattern of small grouped areas of punctiform pigment, heavier on head and thorax. A large species. Eyes absent. Postantennal organs situated close to the antennal base, narrowly elliptical. Antennae longer than head or as 26: 18; proportions of segments as 4: 7: 7: 11. Sense organ of third antennal segment wih 2 slightly bent sense rods lying behind a small integumentary fold. Fourth antennal segment with several sensory setae, but not of unusual shape as compared with *Isotoma minor*. Unguis stout, curved slightly, with a pair of outer teeth, and with a strong tooth on inner margin. Unguiculus broadly lanceolate, acute at apex and with a prominent tooth on inner angle. Tenent hairs absent. Third and fourth abdominal segments about subequal in length, fifth and sixth segments not ankylosed. Tenaculum quadridentate; corpus with about 10 setae, with one larger outstanding one. Manubrium to dens as 10: 20. Mucro quadridentate, ventral surface strongly curved, apical tooth large, anteapical tooth about same size, and with 2 small basal teeth not in line with each other. Venter of dens with many moderately stout hairs.

Type locality: Monte Cristo, Utah, July 20, 1951, J. V. Bruce and G. F. Knowlton. Taken in the nests of pocket gophers. Cotypes in NCDA Insect Survey Collection.

The following key may be helpful in separating the eyeless forms of *Isotoma:*

1. Postantennal organs absent, with large sensory cones on fourth antennal segment, genital and anal segments ankylosed ..... minor
   Postantennal organs present, sensory setae of the fourth antennal segment of the usual shape, genital and anal segments usually weakly separated or distinctly demarcated 2
2. Mucro quadridentate; unguis with inner and outer teeth; unguiculus with a strong tooth on inner margin .... *brucei*
   Mucro tridentate; unguis untoothed; unguiculus without teeth 3

3. Unguis with unusually broad lamellae; unguiculus narrow, without lamellae; corpus of tenaculum with several anterior setae ..... *spatulata*
   Unguis broadly lanceolate, without unusual shaped lamellae; unguiculus broad and terminally pointed 4
4. Corpus of tenaculum with 2 anterior setae .... *sphagneticola*
   Corpus of tenaculum with 5 or more setae on anterior *tariva*

Literature Cited

Chamberlian, Roy W. 1943. Four new species of Collembola. The Great Basin Naturalist, vol. IV, Nos. 1 & 2, June 30, 1943, pp. 39–48, figures.

Linnaniemi (Axelson), Walter Mikael. 1912. Die Apterygotenfauna Finlands. II. Spezieller Teil. Acta Soc. Fennicae, vol. 40, no. 5, pp. 1–361, illustrations.

Schäffer, Caesar. 1896. Die Collembola der Umgebung von Hamburg und benachbarter Gebiete. Mitt. Naturh. Mus. Hamburg, vol. 13, pp. 147–216, illus.

BOOK NOTES

The Wonderful World of Insects, by Albro T. Gaul. vi + 290 pp., 47 full page photographs. 5 × 8 ins., cloth bound. 1953. Rinehart and Co., Inc., New York, N. Y. (Price, $4.00)

This volume presents an extremely well-balanced account of the role of the insects in the living world. Although it is written in non-technical language, both the basic as well as many of the modern aspects of the science of entomology are covered clearly and comprehensively. A series of photographs, all taken by the author, augment the text material in an excellent fashion.

The subject matter is arranged under sixteen chapter headings. Some of the topics discussed are How Insects Grow and Mature, The Living Insect, How Insects Act, Insects Societies and Those Intelligent Insects. Each topic stresses fundamental principles which are ably supported by pertinent examples.—George S. Tulloch, Merrick, New York.